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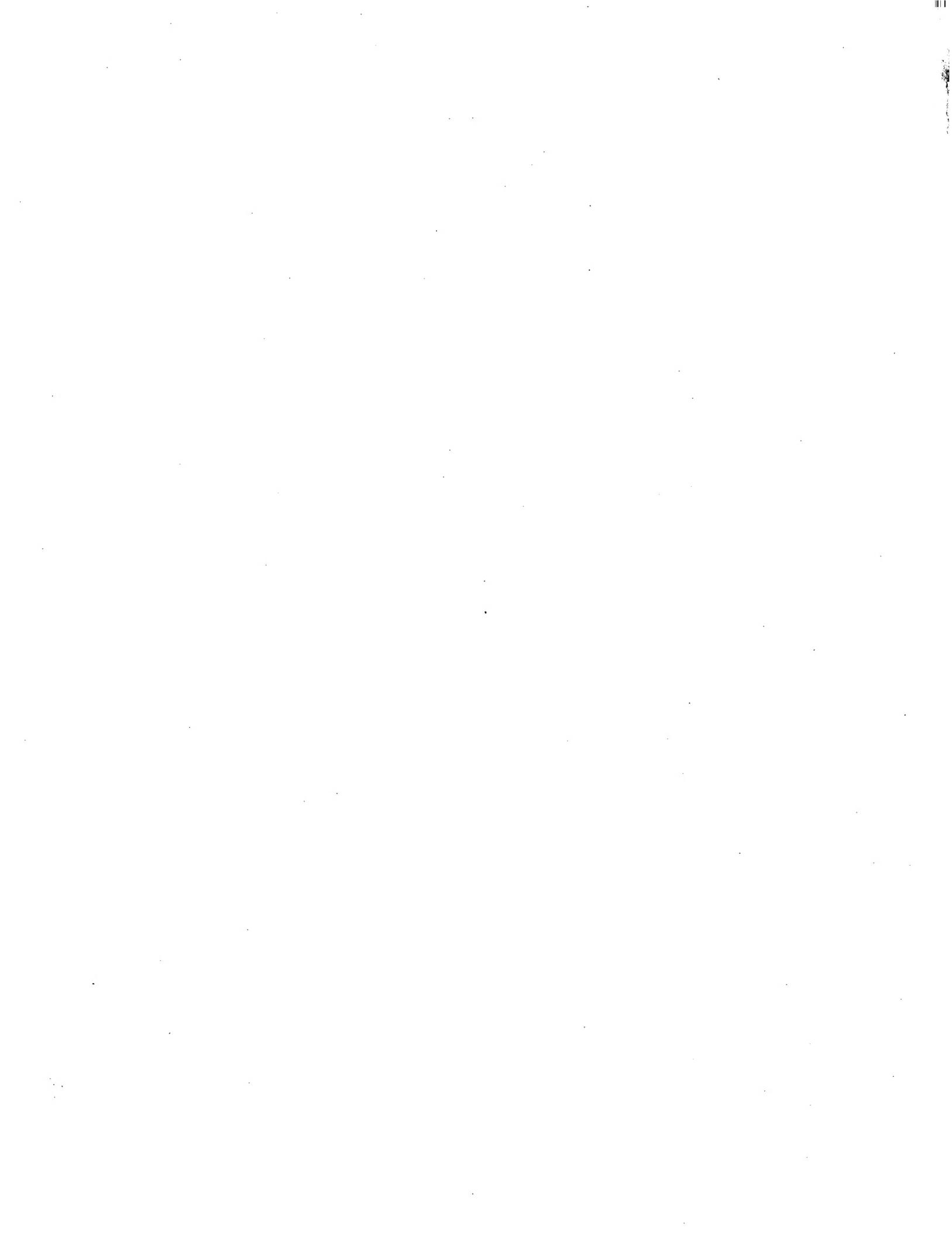
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AMENDED SPECIFICATION.

Reprinted as amended in accordance with the decision of the Superintending Examiner, acting for the Comptroller-General, dated the 28th day of June 1930.

PATENT SPECIFICATION



Application Date: July 31, 1928. No. 22,169 / 28.

319,416

Complete Left: March 14, 1929.

Complete Accepted: Sept. 26, 1929.

PROVISIONAL SPECIFICATION.

Improvements in and connected with Rubber Floor Covering and like Material.

We, MORLAND MICHELL DESSAU, of 5, Whitehall Gardens, Acton Hill, London, W.3, a citizen of the United States of America, and SABETAY LEON FLORES, of 54, Brabant Court, Philpot Lane, London, E.C.3, British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to a covering material suitable for applying to floors, roofs and other surfaces, in which the material is composed of sheet rubber having a suitable backing. Existing covering material of this type cannot be easily affixed to the selected surface particularly when such surface is cement or wood, this being due to the nature of the backing employed which generally is jute, cotton hessian or other like fabric of mesh form. Also the backing does not restrain excessive stretching of the rubber and any irregularities on the surface being covered are perceptible when the covering is laid.

The object of our invention is to provide a rubber floor or like covering in which the above existing disadvantages are obviated and which can be handled and laid in a neat and accurate manner without specially skilled labour.

According to our invention rubber floor covering has a backing consisting of a layer of cork.

In carrying the invention into practice the rubber (unvulcanised) can be spread on to the cork back to a desired thickness so as to get a good combination of the two layers, and the united layers subsequently vulcanised in any suitable manner.

As an alternative method the rubber and cork can be vulcanised by a calendering process, for instance by being passed through hot rollers.

The cork will generally be of thin gauge, and as is known thin gauge cork

cannot be produced in marketable form of any considerable dimensions so that it is most probably essential to employ a plurality of sheets of cork to cover a normal sheet of rubber, particularly for floor covering. To obviate possible cracks or fissures, in the backing where the pieces of cork are united, the engaging edges of the cork can be shaped so as to interlock. For instance the edges can be formed with symmetrical serrations, V shaped teeth, dovetail projections and recesses which fit into each other. The projections may be of circular, diamond, square or other suitable configuration.

When the rubber is spread on to the cork it will combine in such manner that the joints in the cork will not be noticeable, and when the covering is rolled or laid, cracks or hinge like parts at the joints of the cork will not occur.

If desired the cork may be perforated to provide recesses in which the rubber will flow, and if these perforations extend along the joints of the cork backing as well as other parts of the backing, this will materially improve the combination and assist in avoiding cracks and hinges in the backing. Alternatively, or in addition, the cork may be formed on its upper face with recesses or depressions, and/or it may be formed with protuberances, these recesses or projections conveniently being of concave and convex configuration. When the rubber is laid on to the backing it will fill said recesses and receive the projections without affecting the regularity of its plane upper surface, and a permanent anchorage will be obtained.

Many advantages arise out of our invention which have for some time been a desideratum. For instance at present when rubber flooring is stored, the edges curl, whereas the cork backing avoids this

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curling, and ensures that the covering when unrolled will lie quite flat.

Cork is easily cemented to any existing foundation even if the foundation is damp, and it will avoid stretching of the rubber when laid. It also enables a true edge to be easily cut when fitting the covering, and when laid the existence of the cork gives a warmth and a firmness to the covering which is desired with existing rubber coverings.

A covering according to our invention is very useful for applying to surfaces in electric power stations and workshops where it is desired to ensure as much insulation as possible in the surrounding parts. The combination of the rubber and cork has a high dielectric property.

Dated this 31st day of July, 1928.

RAYNER & Co.,  
5, Chancery Lane, London, W.C.2,  
Agents for the Applicants.

#### COMPLETE SPECIFICATION (AMENDED).

#### Improvements in and connected with Rubber Floor Covering and like Material.

We, MORLAND MICHOLL DESSAU, of 5, Whitehall Gardens, Acton Hill, London, W. 3, a citizen of the United States of America, and SABETAY LEON FLORES, of 4, Brabent Court, Philpot Lane, London, E.C. 3, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

This invention relates to a covering material suitable for applying to floors, roofs and other surfaces, in which the material is composed of sheet rubber having a suitable backing or stiffening.

It has been proposed to provide a composite floor covering by compressing to a high degree cork into a layer to form a backing, placing a layer of rubber solution on one face of the backing, and afterwards laying upon the upper side of the backing a face of sheet rubber in one or more pieces and in the unvulcanised state, and finally subjecting the combined materials to pressure and simultaneous vulcanisation.

Also it has been proposed to provide road paving blocks consisting of a mass of granulated cork or sawdust and rubber or rubber compound vulcanised together under pressure, the upper surface of which mass is grooved or channelled to receive a wearing layer about  $\frac{1}{8}$  to  $\frac{3}{4}$  inch thick of high grade "tread" rubber which is vulcanised and keyed to said mass or block by the grooves or channels, and the other sides of which mass are faced with a thin layer of rubber.

According to the present invention we unite a stout layer of rubber to a relatively thin backing of sheet cork by vulcanisation without the intermediary of rubber solution.

In carrying the invention into practice the rubber (unvulcanised) can be spread on to the cork back to a desired thickness

so as to get a good combination of the two layers, and the united layers subsequently vulcanised in any suitable manner.

The rubber and cork can be vulcanised by a calendering process, for instance by being passed through hot rollers, or it can be pressed in suitable hydraulic or the like presses, or rolled and vulcanised on a drum.

Since the cork is merely a relatively thin backing for a stout layer of rubber it will generally be of thin gauge when the material is intended for floor or roof coverings, and as is known thin gauge cork cannot be produced in marketable form of any considerable dimensions so that it is most probably essential to employ a plurality of sheets of cork to cover a normal sheet of rubber, particularly for floor covering. To obviate possible cracks or fissures in the backing where the pieces of cork are united, the engaging edges of the cork can be shaped so as to interlock. For instance the edges can be formed with symmetrical serrations, V shaped teeth, dovetail projections and recesses which fit into each other. The projections may be of circular, diamond, square or other suitable configuration, or bevelled so as to interlock vertically.

When the rubber is spread on to the cork it will combine in such manner that the joints in the cork will not be noticeable, and when the covering is rolled or laid, cracks or hinge like parts at the joints of the cork will not occur.

If desired the cork may be perforated to provide recesses in which the rubber will flow, and if these perforations extend along the joints of the cork backing as well as other parts of the backing, this will materially improve the combination and assist in avoiding cracks and hinges in the backing. Alternatively, or in addition, the cork may be formed on its

upper face with recesses or depressions, and/or it may be formed with protuberances, these recesses or projections conveniently being of concave and convex configuration. When the rubber is laid on to the backing it will fill said recesses and receive the projections without affecting the regularity of its plain upper surface, and a permanent anchorage will be obtained, or the cork can be scarved and overlapped one end to the other or buttressed in any suitable manner.

The cork may have a special surface prepared on it before receiving the rubber, for instance the rubber receiving surface can be coated with a suitable friction material or with latex before the vulcanising process.

The covering material may be intended for a number of purposes, for instance boot soles, mats and linings, washers and other articles.

Grooves and other recesses can be formed in the rubber and filled in with any suitable material, for instance differently coloured rubber or any other suitable filling material.

The invention may be applied to road surfaces by laying the material on roads. The rubber and cork would be materially thicker than would be necessary for the foregoing uses, and would preferably be formed with a plurality of intersecting cuts whereby driving and other stresses due to vehicles would be local.

Embodiments of our invention are illustrated by the accompanying sheet of drawings in which:-

Fig. 1 is a section and Fig. 2 is an inverted plan view of a simple embodiment.

Figs. 3 to 7 inclusive are inverted plan views of various forms of jointing for the cork foundation, and Fig. 8 is a section on the line 8-8 of Fig. 7.

Fig. 9 is a plan view showing the upper surface of the backing formed with indentations as shown in section on the line 10-10 in Fig. 10.

Fig. 11 is a sectional view similar to Fig. 10 but showing the cork backing formed with raised portions.

Referring to the drawings in all of the embodiments illustrated a stout layer of rubber R is united in a permanent manner to a relatively thin layer of cork C of pliable sheet form which has been calendered or otherwise brought to the desired consistency and toughness. The rubber can be spread, before it has been vulcanised, on to the cork to the desired thickness, the spreading action being under the requisite pressure to get a good combination of the rubber and cork. The two layers can now be vulcanised by any

suitable manner, a good method which ensures a reliable adhesion of the rubber and cork being by passing the united materials through hot calendering rollers.

In view of the fact that thin gauge sheet cork would be necessary for floor, roof and other coverings and that thin gauge sheet cork is generally only produced in fairly small dimensions for instance in sheets of about three feet wide, it is necessary in the absence of a commercial method of producing very wide sheets of thin gauge cork to employ with each layer of rubber a plurality of strips of cork with their edges engaged to provide a flat continuous plane for the whole area of the rubber layer. This being so, the engaging edges of the cork sheets should be engaged in such manner as to obviate their separation when the floor covering is rolled up.

A suitable method of obviating the cracks arising out of the rolling up of the material is to shape the edges of the cork so that they interlock. For instance in Figs. 1, 2 and 9 the edges of the cork sheets are formed with uniform V shaped serrations A so that the projections of one strip fit nicely into the corresponding recess of the adjacent strip.

Instead of V shaped serrations, dovetail projections and recess B can be employed as shown in Fig. 3 or sinuous edges D can be formed on the cork as shown in Fig. 4 the projections and recesses being symmetrical to ensure correct registration and easy production.

A still further alternative configuration of interlocking edges is shown in Fig. 5 in which the same effect as the dovetail joints shown in Fig. 3 is obtained, the dovetail projections or recesses however being of diamond form as indicated by the reference letter E. Another alternative method is shown in Fig. 6 in which the sides of the projections and recesses are at right angles to each other, the projections and recesses for instance being square.

If desired the cork C can be formed with a plurality of perforations into which the rubber is forced before being vulcanised. These perforations may be cylindrical as shown at G in Figs. 7 and 8 or of any other suitable configuration. In this embodiment the interlocking edges shown in the preceding figures can be employed or dispensed with, the latter course being possible if the engaging edges F intersect the perforations G.

Instead of or in addition to any of the preceding embodiments the cork foundation may be formed with part spherical or other suitable depressions H on its upper surface as shown in figs. 9 and 10 the rubber filling these recesses.

A still further alternative or additional method of ensuring an efficient uniting of the cork and rubber may consist in forming on the upper face of the cork raised part spherical or other suitable configuration of projections J as shown in Fig. 11. The recesses or projections can be formed in the cork during its production into sheet form by having appropriate projections and/or recesses on or in one of the surfaces between which the cork is pressed into sheet form.

Many advantages arise out of our invention, which have for some time been a desideratum. For instance at present when rubber covering is stored, the edges curl, whereas the cork backing avoids this curling and ensures that the covering when unrolled will lie quite flat.

The rubber receiving face of the cork can be coated with friction materials or latex.

The invention is not necessarily intended for floor and like coverings but can be applied to boot soles by stamping or pressing the material into the desired number and shape of parts. Likewise washers, insulating covers or bases, and numerous other articles can be produced.

Mats and matting can be produced with or without borders. The cork may be fluted before or during attachment to the rubber for instance while it is passing between the calendering rollers, or by being pressed into moulds. Alternatively or in addition suitable designs may be pressed or embossed in the cork and/or the rubber.

When the material is laid in the selected spot or before laying, it can be cut into squares or other suitable shapes by a tool or machine, and the cuts or spaces between the parts can be filled in with any suitable filling material, for instance rubber of a different colour, whereby a mosaic or like effect can be obtained.

By forming the rubber very thick and increasing the thickness of the cork an efficient material for laying road surfaces is provided. The rubber would be cut for its full or nearly its full depth by intersecting cuts giving a block effect whereby any stresses, impacts, and other forces which are applied to the road surface will be local and not spread over a great area of the rubber. A simple method of laying a road is to coat the prepared even surface of the road foundation with a bituminous substance and to apply the cork base of the rubber to the said coated surface a heavy roller being applied to obtain the required adhesion. It is preferable to cut the rubber for not quite its full depth so that the cork is not exposed. The cutting of the rubber may be in any suitable pattern, for

instance on diagonal, transverse or sinuous lines.

The rubber receiving surface of the cork may be roughened, serrated or otherwise shaped to provide a good grip for the rubber.

To provide for the uniting for a number of pieces of rubber covering material the edges of the material may be shaped to interlock for instance in the same manner as shown for the cork backing in the accompanying drawings. These edges may be produced during the laying process or before or after the vulcanising process. For the purpose of securing the covering material suitable eyelets or perforations can be provided around the edges of the material and if desired elsewhere, this will obviate damaging the material by driving nails or screws through the material. The nails or screws which are driven through the said eyelets or perforations can be provided with rubber caps to fill the upper end of the eyelets or perforations, thereby preserving the neat appearance of the material.

To assist in binding the cork to any suitable foundation, the exposed or lower surface of the cork can be corrugated, serrated, formed with grooves or cuts in any suitable manner, particularly when employing bituminous cement or other binding medium. When pressure is applied binding medium will flow into the fissures or openings provided in the surface of the cork and will provide a keying action which prevents withdrawal of the covering material and obviates buckling. This construction would be useful for Tennis Courts and like purposes.

The covering material can be shaped to fit round corners etc., for instance it can be shaped to reside neatly on stairs and steps so as to cover the nosing of the steps.

The cork may be treated with materials which will soften under the influence of heat or a solvent and will subsequently harden and serve as the medium for uniting the covering material to the selected surface, pressure if necessary being applied. Alternatively or in addition knobs or wafers of the adhesive material may be secured to appropriate points of the cork, or they may be adapted to become embedded in the material on the foundation surface. These knobs or wafers may be composed of solidified bitumen, shellac or resin.

When necessary the cork can have applied to the exposed surface a fabric, rubberised material or rubber itself. A covering of rubberised fabric would be useful in applying the invention to boot soles and the like.

The material can be applied to the covering and insulation of steam pipes and other articles, the edges of the material preferably being brought together and 5 interlocked and if desired vulcanised "in situ".

Cork is easily cemented to any existing foundation even if the foundation is damp, and it will avoid stretching of the rubber 10 when laid. It also enables a true edge to be easily cut when fitting the covering, and when laid the existence of the cork gives a warmth and a firmness to the covering which is desired with existing 15 rubber coverings.

A covering according to our invention is very useful for applying to surfaces in electric power stations and workshops where it is desired to ensure as much 20 insulation as possible in the surrounding parts. The combination of the rubber and cork has a high dielectric property.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

(1) A process of producing a floor covering or like material according to which a stout layer of rubber is united to a relatively thin backing of sheet cork by vulcanisation, without the intermediary of rubber solution.

(2) A floor covering or like material comprising a stout layer of rubber united to a relatively thin backing of sheet cork by vulcanisation without the intermediary of rubber solution.

(3) In the production of a covering material according to claim 1, spreading unvulcanised rubber on to sheet cork and subsequently vulcanising the rubber.

(4) A covering material according to claim 2 wherein the backing is composed of a plurality of strips of sheet cork united edge to edge.

(5) A covering material according to claim 2, 3, or 4 in which the cork backing 50 is composed of a number of sheets of cork with interengaging or interlocking edges.

(6) A covering material according to claim 5 in which the engaging edges of the sheets of cork are formed with corresponding projections and recesses.

(7) A covering material according to claim 5 in which said edges of the cork sheet are formed with projections and recesses of V shape, dovetail, diamond, 60 sinuous, square or like configuration, or any combination of same, with or without the use of bevelled edges to the overlapping projections.

(8) A covering material according to

any of the preceding claims wherein the opposing surfaces of the rubber and cork are formed with projections and recesses fitting into each other.

(9) A covering material according to claim 8 wherein said recesses are apertures in the cork into which the rubber is forced.

(10) A covering material according to claim 8 or 9 in which some of the said projections and recesses are intersected by the engaging edges of the strips forming the cork backing.

(11) A covering material according to any of the preceding claims in which the exposed face of the cork is formed with serrations, projections, grooves, a roughened surface or other suitable binding surface.

(12) A covering material according to any of the preceding claims in which the rubber receiving surface of the cork is formed with serrations, projections, grooves or roughened surface or other suitable binding surface.

(13) A covering material according to any of the preceding claims in which latex is introduced between the rubber and the cork.

(14) In a covering material according to any of the preceding claims fluting cork or impressing or embossing designs therein.

(15) A covering material according to any of the preceding claims in which the rubber has cuts formed in it, for instance for road covering or floor covering.

(16) A covering material according to claim 15 in which said cuts are filled in with rubber or other suitable material with or without a distinguishing colour.

(17) A covering material according to any of the preceding claims in which the cork is treated with a binding substance capable of being rendered adhesive by heat or by a solvent.

(18) A covering material according to any of the preceding claims formed with interlocking edges.

(19) A covering material according to any of the preceding claims in which the cork is coated on its outer surface with fabric and/or rubber.

(20) In the production of a covering material according to any of the preceding claims producing the material in the form of boot soles, washers, mats and other useful articles.

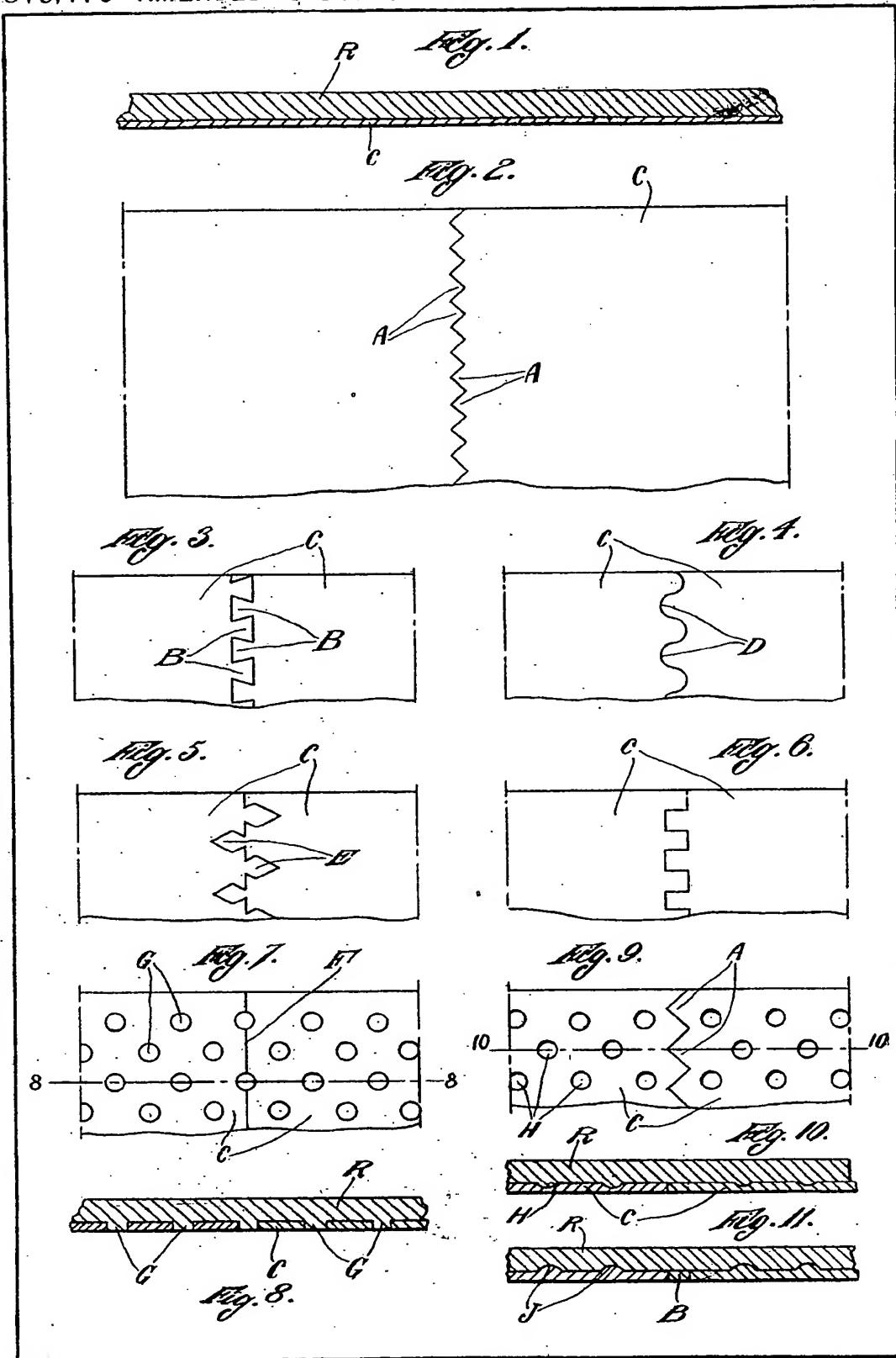
(21) A combined rubber and cork covering substantially as described with or without reference to the accompanying drawings.

(22) The method of preparing a rubber covering with a cork backing substantially as described, with or without reference to the embodiments illustrated.

Dated this 14th day of March, 1929. RAYNER & Co.,  
5, Chancery Lane, London, W.C.,  
Agents for the Applicants.

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*[This Drawing is a reproduction of the Original on a reduced scale]*



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